

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN DIEGO REGION

MONITORING AND REPORTING PROGRAM NO. R9-2003-0003
FOR THE
COUNTY OF SAN DIEGO
SAN MARCOS LANDFILL
SAN DIEGO COUNTY

A. MONITORING PROVISIONS

1. All analyses shall be performed in a laboratory certified to perform such analyses by the California Department of Health Services or a laboratory approved by the Regional Board. Specific methods of analysis must be identified. If methods other than U. S. EPA approved methods or Standard Methods are used, the exact methodology must be submitted for review and must be approved by the Regional Board prior to use. The director of the laboratory whose name appears on the certification shall supervise all analytical work in his/her laboratory and shall sign all reports of such work submitted to the Regional Board.
2. If the discharger monitors any pollutants more frequently than required by this Order, using standard U. S. EPA (USEPA) Methods, Protocols or as specified in this Order, the results of this monitoring shall be included in the calculation and reporting of the data submitted in the discharger's monitoring report. The increased frequency of monitoring shall also be reported.
3. The discharger shall report all instances of noncompliance not reported under **Reporting Requirement E.5** of this Order at the time monitoring reports are submitted. The reports shall contain the information listed in **Reporting Requirement E.5**.
4. Sample collection, storage, and analysis shall be performed according to the protocols included in the USEPA "SW-846: Test Methods for Evaluating Solid Wastes, Physical/Chemical Methods (Version 5, dated April 1998, or the most recent version of SW-846), and in accordance with an approved sampling and analysis plan.
5. All monitoring instruments and equipment shall be properly calibrated and maintained as necessary to ensure accuracy of measurements.
6. The discharger shall retain records of all monitoring information, including all calibration and maintenance records and copies of all reports required by this Order. Records shall be maintained for a minimum of *five years* from the date of the sample, measurement, report or application. This period may be extended during the course of any unresolved litigation regarding this discharge or when requested by the Regional Board.

7. Records of monitoring information shall include:
 - a. The date, identity of sample, Monitoring Point from which it was taken, and time of sampling or measurement;
 - b. The individual(s) who performed the sampling or measurements;
 - c. Date and time that analyses were started and completed, and the name of the personnel performing each analysis;
 - d. The analytical techniques or method used, including method of preserving the sample and the identity and volumes of reagents used;
 - e. Calculation of results; and
 - f. Results of analyses and the method detection limit (**MDL**) for each parameter.
 - g. Laboratory quality assurance results (*e.g.* percent recovery, response factor).
8. The monitoring reports shall be signed by an authorized person as required by **Reporting Requirement E.13** of this Order.
9. The discharger shall ensure that the laboratory analysis of all samples from Monitoring Points and Background Monitoring Points complies with the following restrictions:
 - a. The methods of analysis and the detection limits used shall be appropriate for the expected concentrations. For detection monitoring of any constituent or parameter that is found in concentrations which produce more than 90% non-numerical determinations (*i.e.*, “trace” or “ND”) in data from Background Monitoring Points for that medium, the analytical method having the lowest MDL shall be selected from among those methods which would provide valid results in light of any matrix effects involved.
 - b. Analytical results falling between the MDL and the practical quantitation limit (**PQL**) shall be reported as “trace” and shall be accompanied both by the (nominal or estimated) MDL and PQL values for that analytical run.
 - c. MDLs and PQLs shall be derived by the laboratory for each analytical procedure, according to State of California laboratory accreditation procedures. These nominal MDLs and PQLs shall reflect the detection and quantitation capabilities of the specific analytical procedure and equipment used by the lab, rather than simply being quoted from USEPA analytical method manuals. In relatively interference-free water, laboratory-derived

MDLs and PQLs are expected to closely agree with published USEPA MDLs and PQLs.

If the lab suspects that, due to a change in matrix or other effects, the true detection limit or quantitation limit for a particular analytical run differs significantly from the laboratory-derived nominal MDL/PQL values, the results shall be flagged accordingly, along with estimates of the detection limit and quantitation limit actually achieved. The MDL shall always be calculated such that it represents a concentration associated with a 99% reliability of a non-zero result. The PQL shall always be calculated such that it represents the lowest constituent concentration at which a numerical value can be assigned with reasonable certainty that it represents the constituent's actual concentration in the sample. Normally, PQLs should be set equal to the concentration of the lowest standard used to calibrate the analytical procedure.

- d. All Quality Assurance/Quality Control (**QA/QC**) data shall be reported, along with the sample results to which it applies, including the method, equipment, and analytical detection and quantitation limits, the recovery rates, an explanation for any recovery rate that is less than 80%, the results of equipment and method blanks, the results of spiked and surrogate samples, the frequency of quality control analysis, and the name and qualifications of the person(s) performing the analyses. Sample results shall be reported unadjusted for blank results or spike recovery. In cases where contaminants are detected in QA/QC samples (*i.e.*, field, trip, or lab blanks), the accompanying sample results shall be appropriately flagged.
- e. Upon receiving written approval from the Regional Board, an alternative statistical or non-statistical procedure can be used for determining the significance of analytical results for a constituent that is a common laboratory contaminant (*e.g.*, methylene chloride, acetone, diethylhexyl phthalate, and di-n-octyl phthalate) during any given Reporting Period in which QA/QC samples show evidence of laboratory contamination for that constituent. Nevertheless, analytical results involving detection of these analytes in any background or downgradient sample shall be reported and flagged for easy reference by the Regional Board.
- f. Unknown chromatographic peaks shall be reported, along with an estimate of the concentration of the unknown analyte. When unknown peaks are encountered, second column or second method confirmation procedures shall be performed to attempt to identify and more accurately quantify the unknown analyte.
- g. The MDL and PQL shall be determined in accordance with the definitions of those terms in Title 27, California Code of Regulations (**27 CCR**). In the event that an MDL and/or PQL change for a Monitoring Parameter (**MPar**),

the discharger shall highlight that change in the report's summary and the report shall include an explanation for the change that is written and signed by the owner of the analytical laboratory.

10. A list containing definitions of terms and acronyms are contained in Appendix A attached to this Monitoring and Reporting Program (**M&RP**).

B. GROUND WATER MONITORING FINDINGS

1. Ground water beneath the San Marcos Landfill has exceeded the Water Quality Protection Standard (water standard) of 27 CCR §§20390, 20395, and 20400 for one or more MPars in samples collected from four downgradient wells (SMGW-16, SMGW-30D, SMGW-31 and SMGW-35). Therefore, pursuant to 40CFR § 258.54(c)(2) this monitoring and reporting program (**MRP**) places the discharger into a Federal Assessment Monitoring Program (**AMP**), meeting 40 CFR §258.55, in addition to a Corrective Action Plan, meeting 27 CCR §20430.
2. Ground water beneath the San Marcos Landfill has measurably exceeded the Water Standard for one or more federal (Appendix II) constituents. Therefore, pursuant to 40 CFR 258.55(g)(1)(iv), the County of San Diego is required to initiate an Assessment of Corrective Measures (**ACM**) and Selection of Remedy (**SOR**) meeting 40 CFR §§258.56 and 258.57, respectively, in developing a Corrective Action Plan (**CAP**) meeting the requirements of 40 CFR §258.58.
3. On September 25, 2003, the County of San Diego submitted a Subtitle D checklist and supplemental information that demonstrated its compliance with Subtitle D requirements. The supplemental information contained a point-by-point demonstration that all requirements for the SOR and ACM have been met based on ten years of operation and monitoring the effectiveness of the corrective action measures at the San Marcos Landfill.
4. This Order complies with SWRCB Resolution No. 93-62 by requiring the discharger who owns or operates a landfill that has undergone a release to implement an EMP, under Title 27, and to implement all additional federal responses, including those required under 40CFR §§258.54(c) and 258.55(g). The County of San Diego has complied with the EMP requirements contained in 27 CCR §20425 by delineating the nature and extent of the release from the San Marcos Landfill.
5. In 1997, the County of San Diego sold the North County Resource Recycling Facility (San Marcos Landfill's recycling center) to Allied Waste Industries, Inc. The recycling center was located within the facility boundary of the San Marcos Landfill. Three of the downgradient wells (SMGW-16, SMGW-30D and SMGW-31) within the release from the San Marcos Landfill are located on this property. Therefore, the release "has migrated offsite" and is subject to notification requirements contained in 27 CCR and 40 CFR 258. By letter dated September 5, 2003, the County of San

Diego notified the affected party in accordance with 27 CCR §20425(b) and 40 CFR §258.55(g)(1)(iii).

6. The discharger has implemented corrective measures, specifically a landfill gas collection system and a hydraulic barrier via pumping, to reduce the migration of VOCs. However, VOCs continue to be identified in samples collected from ground water.
7. The existing LFG collection and extraction system consists of a series of horizontal collectors and vertical wells. A series of LFG monitoring probes are located around the perimeter of the landfill footprint.
8. To further reduce the downgradient migration of contaminants in ground water, three ground water monitoring wells (SMGW-16, SMGW-30D and SMGW-31) are pumped to create a localized cone of depression in the ground water table, causing impacted ground water to flow towards the monitoring wells and remain onsite. The ground water is pumped to an above ground storage tank and is used onsite for landfill maintenance or is discharged to Copper Creek. A fourth ground water monitoring well (SMGW-35) is pumped twice daily. The ground water is used to irrigate native vegetation outside the northern waste boundary of the waste management unit.
9. The supplemental information provided by the County of San Diego on September 25, 2003 included time-series plots with ten years of data for downgradient wells SMGW-16, -30D, -31 and -35. Monitoring results indicate the release from the San Marcos Landfill consists on only VOCs and is limited to the above ground water monitoring wells. Based on the time-series plots, the nature and extent of contamination has not changed. In addition, there have been significant reductions in concentrations of several VOCs. However, concentrations of 1,1-dichloroethane have been historically higher than other VOCs and will take longer to remediate. The County of San Diego estimates that VOCs may reach asymptotic levels for all VOCs by 2009. This schedule complies with 40 CFR 258.565(c)(2). For this release, the concentration limit for the VOCs is each constituent's MDL.
10. Since 1995, the discharger has been monitoring leachate annually for Appendix II constituents of 40 CFR §258, and re-testing for newly discovered ones, in order to create a constituent of concern (**COC**) list containing those Appendix II constituents that could be released from the landfill. This M&RP narrows the scope of the COC list to include, from Appendix II, only those constituents that have been detected and verified in leachate. By monitoring for detectable COCs, and any foreseeable breakdown products, the discharger will be monitoring for all Appendix II constituents that could be released from the landfill. This is the manner in which this M&RP meets the requirements of 40 CFR §258.55(b).
11. For those Appendix I metals detected and verified in the landfill's leachate, the Regional Board, after considering the factors listed under 40 CFR §258.54(a)(2), has substituted inorganic surrogates in the landfill's MPar list, but has included all such

displaced metals in the landfills COC list. The current COC list is contained in Attachment No. 2 to this M&RP.

12. Like most landfills, the San Marcos Landfill exhibits considerable natural geographic variation (between-well variation) regarding the median concentration of any given MPar. Under such conditions, when data from background wells are used as background data for comparing against downgradient well data, this increases the chance that Detection Mode monitoring will fail to recognize a real release of waste constituents. It also increases the rate at which false-positive indications that a release may occur. Therefore, the Regional Board is revising this M&RP to eliminate the adverse effects of geographic variation, by implementing an intra-well comparison style of monitoring for all well/MPar pairs for which this approach is feasible. Under this approach, the prior data from the well is used as the reference against which new data is tested.
13. This M&RP minimizes the occurrence of false-positive indications in two ways: **a)** it includes a nonstatistical data analysis method, meeting 27 CCR §20415(e)(8 & 9), that collectively analyzes all MPars, at a given well, whose background data exceeds its respective Method Detection Limit (**MDL**) no more than 10% of the time; and **b)** all statistical and nonstatistical data analysis methods used on well/MPars in Detection Mode data analyses, under this M&RP, include a discrete retest as described under 27 CCR §20415(e)(8)(E).
14. To assure compliance with the requirements and considerations under 40 CFR §258.55-§258.57 and 27 CCR §20425 in the simplest way possible, this M&RP:
a) requires statistical or nonstatistical data analysis, at any given compliance well outside of the release, for those MPars that are in Detection Mode at that well;
b) requires concentration-versus-time plotting, at any given compliance well within the release, for all MPars that are in Tracking Mode at that well; **c)** utilizes an initial scan for all Appendix II constituents at all point of compliance wells involved in the release to be sure that the MPar and COC lists include all Appendix II constituents detectable in ground water; **d)** thereafter, uses a periodic (five-yearly) presence/absence screening of all COCs, rather than statistical/nonstatistical data analysis, at all appropriate wells to keep the MPar list updated to include all COCs that are detectable in ground water; **e)** uses annual leachate sampling, for all non-COC Appendix II constituents, to keep the COC list updated to include all Appendix II constituents that the landfill could release; and **f)** implements an automatic update procedure to assure that the MPar and COC lists remain current.

C. CORRECTIVE ACTION/ASSESSMENT MONITORING PROGRAM

1. The ground water monitoring network for the San Marcos Landfill consists of background wells and compliance wells. The background (upgradient/cross-gradient) monitoring wells are SMGW-17, SMGW-24, and SMGW-26, SMGW-36, SMGW-37D and SMGW-37S. The compliance monitoring wells are: SMGW-16, SMGW-30D, SMGW-31, SMGW-33, SMGW-35, SMGW-39 and SMGW-40. The locations of these groundwater-monitoring wells are shown on Attachment No. 1 to this M&RP.
2. Water samples shall be collected, analyzed, and reported as shown in the following table:

MONITORING PARAMETERS	UNITS	SAMPLING AND REPORTING FREQUENCY
pH	pH	Semi-Annually
Total Dissolved Solids	mg/l	Semi-Annually
Chloride	mg/l	Semi-Annually
Sulfate	mg/l	Semi-Annually
Nitrate as Nitrogen	mg/l	Semi-Annually
Organic Constituents*	µg/l	Semi-Annually

Note: mg/l = milligrams/liter and µg/l = micrograms/liter

* Organic Constituents shall include Appendix II constituents detected and verified by retest and all Constituents of Concern detected and verified by retest of samples collected to comply with Corrective Action/Assessment Monitoring Program C.11.

3. The discharger shall establish and maintain ground water wells at the landfill to be used as part of the ground water monitoring program.
4. Prior to pumping monitoring wells for sampling, the static water level shall be measured to the nearest 0.01 ft. in each well.
5. For any given monitored medium, samples shall be collected: 1) from all Monitoring Points and Background Monitoring Points to satisfy the data analysis requirements for a given Reporting Period; 2) during the latter third of the Reporting Period within a span not exceeding **30 days**; and 3) in a manner that insures sample independence to the greatest extent feasible. Sample procurement shall be carried out as late in the

Reporting Period as feasible, considering the time needed to analyze the samples, analyze the resulting data, and to prepare and submit the monitoring report within **30 days** after the end of the Reporting Period.

6. Prior to sampling monitoring wells, the presence of a floating immiscible layer in all wells shall be determined at the beginning of each sampling event. This shall be done prior to any other activity that may disturb the surface of the water in a well, *e.g.* water level measurements. If an immiscible layer is found, the discharger shall notify the Regional Board within **24 hours**.
7. For each monitoring well, the discharger shall measure the water level and determine ground water flow rate and direction at least quarterly, including the times of expected highest and lowest elevations of the water level for the respective ground water body. Ground water elevations for all background and downgradient wells for a given ground water aquifer shall be measured within a period of time short enough to avoid temporal variations in ground water flow which could preclude accurate determination of ground water flow rate and direction. This information shall be included in the semi-annual monitoring reports.
8. Ground water sampling shall also include an accurate determination of field parameters (pH, temperature, electrical conductivity and turbidity) for each Monitoring Point or Background Monitoring Point [27 CCR § 20415(e)(13)].

9. **Surface Water Monitoring**

Surface water monitoring shall be conducted semiannually in Copper Creek (when there is sufficient water to collect a sample). Surface water samples are analyzed for the monitoring parameters in *Corrective Action/Assessment Monitoring Program C.2*. The upgradient surface water sampling point is SMSP-2 and the downgradient surface water sampling point is SMSP-4. The locations of these sampling points are shown on Attachment No. 1 to this M&RP.

10. **Leachate Monitoring**

- (a) Every **September**, the discharger shall sample the leachate from the leachate collection and removal system (LCRS) and analyze the sample for all Appendix II constituents that are not yet on the COC list. The COC list shall consist of all waste constituents listed in this M&RP and include each constituent listed in Appendix II to 40 CFR Part 258 that is not already a COC for the San Marcos Landfill and that both:

- (1) Is detected in a sample of the landfill's leachate.

The discharger shall submit the analytical results to the Regional Board by **October 30**, including an identification of all detected

Appendix II constituents that are not currently on the landfill's Constituent of Concern list (non-COCs); and

- (2) Is also detected in a retest leachate sample collected the following ***March***.

The discharger is required to sample and analyze this retest sample only in cases where the annual leachate sample identifies non-COCs. The retest sample shall be analyzed only for the non-COCs detected in the ***September*** sample. During any year in which a ***March*** leachate retest is carried out, the discharger shall submit a report to the Regional Board, by no later than ***April 30***, identifying all constituents which must be added to the landfill's COC list as a result of detection in both the ***September*** and ***March*** analyses. The report shall also include an updated COC list that includes the Appendix II constituents that are newly detected in both the ***September*** and ***March*** leachate samples. In addition, the revised COC list must be noted in the operating record within ***14 days***, permanently adding these constituents to the landfill's COC list. Within ***seven days*** of amending the Facility's Operating Record pursuant to this section, the discharger shall also provide written notification to the Regional Board indicating that they have made the amendment.

- (b) For each Appendix II constituent (excluding synthetic constituents) that is added to the landfill's COC list (as described above), the discharger shall establish a reference background value in ground water following the procedures required in *Corrective Action/Assessment Program Specification G.8*. Once this reference set of background data is collected, the discharger shall include it as a separate item in the next monitoring report submittal.

11. **Five – Yearly COC Scan**

- a. Every ***five years***, subsequent to the initial Appendix II scan (under *Corrective Action/Assessment Program Specification G.2.c*), the discharger shall analyze a sample from each ground water monitoring well known to be within the release (as described in *Corrective Action/Assessment Monitoring Program C.11.a.i & ii* below) for the detectable presence (including trace determinations) of all COCs not yet known to be part of the release, including all Appendix II constituents (Attachment No. 2 to this M&RP) that have ever been detected and verified in leachate (see *Corrective Action/Assessment Program Specification G.9*) but not yet identified as part of the release. This constitutes the means by which the discharger continues to meet the requirements of 40 CFR §258.55(b-d). [Note: See *Reports to be Filed with the Regional Board H.5*].

- i. A minimum of one sample from each affected well must be collected and analyzed during each COC scanning event. If a COC is detected (including trace value) that is not yet on the MPar list, the discharger shall, within **30 days**, collect a single resample from the indicating well(s) and reanalyze it only for the newly-detected constituent(s).
- ii. Any COC detected in samples collected from a ground water monitoring well, and verified by a retest, automatically becomes part of the MPar list for the facility. The discharger shall notify the Regional Board of any such change **immediately**, via phone, facsimile or e-mail and shall note prominently the constituent(s) added to the MPar list in the next scheduled monitoring report, along with a listing of which well(s) were involved in this detection and verification. In addition, the updated MPar list must be noted in the Facility's Operating Record within **14 days** of verification, permanently adding these constituents to the landfill's MPar list. Within **seven days** of amending the Facility's Operating Record pursuant to this section, the discharger shall also provide written notification to the Regional Board indicating that they have made the amendment.

12. Site Inspections

- a. At a minimum, a site inspection shall be conducted **quarterly** and include an evaluation of all systems including, but not limited to, the landfill gas collection system, condensate and leachate containment structures, sumps, and run-on and runoff drainage control structures. The inspection reports shall contain information on the site condition and a discussion of any significant findings with regard to:
 - i. General site condition;
 - ii. The condition of the landfill cover system, including the top deck, intermediate benches and sideslopes;
 - iii. The condition of the storm water conveyance system;
 - iv. The effectiveness of erosion control BMPs;
 - v. The condition of the leachate monitoring point(s);
 - vi. The condition of water quality monitoring networks;
 - vii. The status/condition of the landfill gas control system;
 - viii. Maintenance activities performed at the site; and
 - ix. Condition of temporary soil stockpiles at the site.
- b. All deficiencies identified, and photographed and shall be recorded in a permanent log. The volume of liquids collected in each containment structure shall be recorded **quarterly**.
- c. The waste management unit shall be evaluated to determine its effectiveness to comply with this Order.

- d. During dry weather conditions, the effectiveness of the drainage control system shall be evaluated on the basis of its conformance to the as-built drawings, or revisions thereto, for the system.
- e. The quarterly inspection reports shall be filed with the next semiannual monitoring report.

D. RESPONSE TO A RELEASE

- 1. If the discharger determines that there is significant physical evidence of a release, the discharger shall notify the Regional Board by telephone within **24-hours** and by certified mail within **seven days**. The discharger shall carry out the requirements of Response to Release D.3 for all potentially affected monitored media.
- 2. If the discharger determines that there is significant statistical evidence of a release, (i.e., the initial statistical comparison or non-statistical comparison indicates, for any Constituent of Concern or monitoring parameter, that a release is tentatively identified), the discharger shall immediately notify Regional Board staff verbally as to the monitoring point(s) involved, shall provide written notification by certified mail within **seven days** of such determination, and shall carry out a discrete test [see *Corrective Action/Assessment Program Specification G.9.c* (statistical method) or *G.10.b* (non-statistical method) of this M&RP].
- 3. If the discharger concludes that a release has been discovered:
 - a. If this conclusion is not based upon direct monitoring of the Constituents of Concern, then the discharger shall, within **30 days**, sample for all COCs at all monitoring points in the affected medium for the waste management unit, and submit them for laboratory analysis. Within **seven days** of receiving the laboratory analytical results, the discharger shall notify the Regional Board, by certified mail, of the concentration of all COCs at each monitoring point in the affected medium. Because this scan is not to be statistically tested against background, only a single datum is required for each COC at each monitoring point.
 - b. The discharger shall, within **90 days** of discovering the release, submit a revised Report of Waste Discharge proposing an Evaluation Monitoring Program meeting the requirements of 27 CCR §§ 20420(k)(5) and 20425 and, satisfies the requirements of 40 CFR §258.55.

- c. The discharger shall, within **180 days** of discovering the release, submit to the Regional Board a preliminary engineering feasibility study meeting the requirements of 27 CCR §20420(k)(6).
 - d. Within **14 days** of completing an individual step in this *section (D. 3.a, 3.b or 3.c)*, the discharger shall amend the Facility's Operating Record with any results from their evaluation, testing, re-testing, or any technical reports submitted to the Regional Board. Within **seven days** of making an amendment to the Facility's Operating Record pursuant to this section, the discharger shall also provide written notification to the Regional board indicating that they have amended the Operating Record.
4. In the event the discharger concludes a release has been tentatively indicated (under the statistical or non-statistical method), the discharger shall, within **30 days**, collect additional sample (s) for the indicated COCs or monitoring parameter(s) at each indicated monitoring point, collecting at least as many samples per suite as were used for the initial test. Re-sampling of the background monitoring points is optional. Samples shall be analyzed using the same analytical methods that produced the original data indicating the tentative evidence of a release. Sample data shall be analyzed using the same statistical procedure or non-statistical procedure that provided the tentative evidence of a release.

As soon as the data are available, the discharger shall rerun the statistical or non-statistical method separately upon each suite of retest data. For any indicated monitoring parameter or COC at an affected monitoring point, if the test results of either (or both) of the retest data suites confirm the original indication, the discharger shall conclude that a release has been discovered.

All retests shall be carried out only for the monitoring point(s) for which a release is tentatively indicated, and only for the COC or monitoring parameters which triggered the indication there, as follows:

- a. If an ANOVA method was used for the original data, the retest shall involve only a repeat of the multiple comparison procedure, carried out separately on each of the two new suites of samples taken from the indicating monitoring point.
- b. If the Method of Proportions was used for the original data, the retest shall consist of a full repeat of the statistical test for the indicated

constituent or parameter, performed separately on each of the new sample suites from the indicating monitoring point.

- c. If the non-statistical method was used for the original data:
 - i. Because all COCs that are jointly addressed in the non-statistical test remain as individual COCs, the scope of the laboratory analysis for the non-statistical retest samples shall address only those constituents detected in the sample that initiated the retest.

If the retest confirms the existence of a release, the discharger shall carry out the requirements (described in D.3 above).

E. RESPONSE TO DETECTION OF VOCS IN BACKGROUND (or any other constituent which is expected to be “zero” in background and not amenable to statistical analysis)

- 1. Except as provided in E.3 below, any time the laboratory analysis of a sample from a background monitoring point, sampled for VOCs shows either:
 - (a) two or more VOCs at or above their respective MDL, or
 - (b) one VOC at or above its respective PQL, then the discharger shall:
 - i. Immediately notify the Regional Board by phone and facsimile.
 - ii. Follow up with written notification by certified mail within *seven days*.
 - iii. Obtain two new independent VOC samples from that background monitoring point.
 - iv. Send the samples for laboratory analysis of all detectable VOCs within *30 days*.
- 2. If either or both the new samples validate the presence of VOC(s), using the above procedure, the discharger shall:
 - a. Immediately notify the Regional Board by phone and facsimile.
 - b. Follow up with written notification by certified mail within *seven days*.

- c. Within **180 days** of validation, submit a report that evaluates the possibility that the detected VOC(s) originated from the waste management unit and proposing appropriate changes to the monitoring program.
3. If the Regional Board determines (after reviewing the report submitted under 2.b above) that the VOC(s) detected originated from a source other than the waste management unit, the Regional Board may make appropriate changes to the monitoring program.
4. If the Regional Board determines, after reviewing the report submitted under 2.b above, that the detected VOC(s) most likely originated from the waste management unit, the discharger shall assume that a release has been detected and shall immediately begin carrying out the requirements of E.3 above.
5. If the Regional Board is unable to conclude that the evidence indicates the detected man-made constituent came from a source other than the Unit, then the discharger shall:
 - a. List this constituent as an MPar, if it is not already so listed, in the next scheduled monitoring report and shall note this change prominently in the report's summary;
 - b. Include this background well as part of the release, for that MPar and, thereafter, shall address this well/MPar pair in tracking mode (*i.e.*, as part of the release), in spite of the well's being a background well, beginning with the next scheduled monitoring report; and

Within **90 days**, install a new upgradient or cross-gradient background well in a portion of the aquifer that will provide data representative of background conditions for the Unit's compliance wells (if there is not at least one other background well unaffected by this constituent).

F. RELEASE BEYOND FACILITY BOUNDARY

1. Any time the discharger concludes that a release from the waste management unit has proceeded beyond the facility boundary, the discharger shall notify all persons who either own or reside upon the land that directly overlies any part of the plume (affected persons).

2. Initial notification to affected persons shall be accomplished within **14 days** of making this conclusion and shall include a description of the discharger's current knowledge of the nature and extent of the release.
3. The discharger shall provide updates to all affected persons, including any persons newly affected by a change in the boundary of the release, within **14 days** of concluding there has been any material change in the nature or extent of the release.
4. Each time the discharger sends a notification to affected persons, the discharger shall provide the Regional Board within **seven days** of sending such notification, with copies of the notification and a current mailing list of affected persons.
5. Each time the discharger sends a notification to affected persons or the Regional Board, within **14 days** of sending the notification the discharger shall amend the Facility's Operating Record to include that notification and any attachments thereto. Within **seven days** of making an amendment to the Facility's Operating Record pursuant to this section, the discharger shall also provide written notification to the Regional Board indicating that they have amended the Operating Record for the Facility.

G. CORRECTIVE ACTION/ASSESSMENT PROGRAM SPECIFICATIONS

1. The discharger shall comply with the requirements of 27 CCR §20415 for any water quality-monitoring program developed to satisfy 27 CCR §20420, §20425, or §20430 and the requirements of this Order.
 - i. The ground water monitoring shall meet the requirements of 27 CCR §20415(b) and 40 CFR §258.51 (a, c, and d);
 - ii. The surface water monitoring shall meet the requirements of 27 CCR §20415(c) and shall be conducted in accordance with *Corrective Action/Assessment Monitoring Program C.9*. In addition, whenever possible, the discharger shall measure volumetric flow — or, at a minimum, visually estimate the flow rate — for all surface water monitoring points with flowing water;
 - iii. All monitoring and data analysis shall be in accordance with the general monitoring requirements of 27 CCR §20415(e) or other options as provided in this Order.

2. The CAP shall include and implement all applicable state and federal requirements (27 CCR§20430 and 40 CFR §258.58) and all applicable elements of an AMP (40CFR §258.55):
 - a. The County of San Diego shall conduct water quality monitoring at the San Marcos Landfill in accordance with 27 CCR §20430(CAP) and 40 CFR §258.55 (AMP);
 - b. The County of San Diego shall submit an assessment of the effectiveness of the landfill's current corrective action program semiannually in accordance with 27 CCR §20430(h). As of the date of adoption of this Monitoring and Reporting Program, the concentration limits for each MPar is established as its respective background concentration;
 - c. The County of San Diego shall continue to conduct annual Appendix II leachate analysis for all Appendix II constituents not yet detected in leachate and shall perform verification resampling within six (6) months of the preliminary identification of any newly-detected constituents. Upon detection and verification of a new Appendix II constituent in leachate, the County of San Diego shall, within **14 days**: 1) add the new constituent(s) to the landfill's COC list; 2) include the revised COC list in the Operating Record; 3) provide the Regional Board with an updated COC list, together with a list of the constituent(s) added; and 4) for new constituents that are naturally occurring and require a background value, collect one sample from each compliance well during each semiannual monitoring period for a period of two years. For synthetic constituents not normally expected to be present in background, additional sampling is not required; and 5) for new constituents that are naturally occurring and require a reference background set, initiate an accelerated background data set in accordance with *Corrective Action/Assessment Program Specification G.8*. Once leachate monitoring has identified a new COC, the discharger shall note it prominently in the next monitoring report, together with each such new COC's concentration in the leachate.
 - d. In the event that any MPar involved in the release migrates offsite, notify all off-site affected parties [under 40CFR §258.55(g)(1)(iii)] within **30 days** after discovery or confirmation. Thereafter, keep this list updated and, within **30 days** of creating or updating the list, provide a copy to the Regional Board and place a copy into the operating record.

3. **Water Quality Protection Standard**

Pursuant to 27 CCR §20415(e)(7), the San Marcos Landfill is in violation of its water quality protection standard (**Water Standard**) any time a given detection mode well/MPar pair exhibits a measurably significant increase over the applicable background data set (and changes to tracking mode), as determined by an appropriate statistical or nonstatistical data analysis method. All well/MPar pairs in tracking mode

remain in violation of the Water Standard until completion of a successful proof period that ends the CAP [see 27 CCR §20430(g) and 40 CFR §258.58(e)]. Pursuant to 27 CCR §20390, the Water Standard for ground water at the San Marcos Landfill consists of the following components:

- a. **Constituents of Concern (COC)** [see 27 CCR §20395]
The COCs for the San Marcos Landfill are listed in Attachment No. 2 to this M&RP, including any updates made pursuant to *Corrective Action/Assessment Monitoring Program C.10* of this M&RP. Nevertheless, under this M&RP, statistical and nonstatistical data analysis is limited to those COCs that are on the current MPar list by virtue of their being present in detectable levels either in ground water or in that portion of the ground water that is affected by the release;
 - b. **Concentration Limits**
The concentration limit of a given well/MPar pair is its applicable background data set, as determined or updated pursuant to *Corrective Action/Assessment Program Specification G .9.a.* or *G.11* of this M&RP [see 27CCR §20400(b)(2)];
 - c. **POC & Monitoring Wells**
The point of compliance, compliance wells (SMGW-16, SMGW-30D, SMGW-31 and SMGW-35), and background wells (SMGW-17, SMGW-24, SMGW-26, SMGW-36, SMGW-37D and SMGW-37S) are shown in Attachment No. 1 to this M&RP [see 27 CCR §20405];
 - d. **Compliance Period** — The compliance period for this landfill, which is **28 years** [see 27 CCR §20410].
4. The Regional Board may approve alternative monitoring parameters that meet the requirements of both 27 CCR §§20380 *et seq.* and 40 CFR §258.54. The Regional Board may also approve alternative statistical or non-statistical methods that meet the requirements of 27 CCR §20415(e) and 40 CFR §258.53.
 5. Because the San Marcos Landfill has had, and continues to have, a measurably significant release, the discharger shall comply with the following requirements in order to bring the site into compliance with 27 CCR §20430 and 40 CFR §258.58:
 - a. The discharger shall submit technical reports evaluating the effectiveness of the corrective action program semiannually. The technical evaluation may be included as an appendix to the semiannual monitoring reports required to be submitted in accordance with this MRP.

- b. If the Regional Board or the discharger determines that the corrective action measures are ineffective, after reviewing the technical report, then the discharger shall propose to the Regional Board revised corrective action measures.
6. The discharger shall continue to implement the current suite of Corrective Action Measures (CAMs), together with any additional or replacement interim CAMs the Regional Board either approves, at the discharger's request, or requires for the protection of water quality.
7. The discharger shall install any additional ground water, soil pore liquid, soil pore gas, or leachate monitoring devices necessary to comply with this M&RP, as adopted or as revised by the Regional Board.
8. **ESTABLISHING INITIAL COC DATA**
 - a. For any inorganic COC that does not have at least 10 data points of data at any given background and compliance well (*e.g.*, for a new COC established under *Corrective Action/Assessment Monitoring Program C.11*), the discharger shall establish the prevailing concentration of that constituent at each such data-deficient well by taking and analyzing one sample monthly at each data-deficient background and downgradient monitoring point until each such well has at least **10 data points**.
 - b. For any upgradient or downgradient well installed after the effective date of this M&RP, the discharger shall establish the prevailing concentration for each inorganic COC by using an accelerated sampling schedule for ten months. These data shall be used, as described in *Corrective Action/Assessment Program Specification G.9(a through c)*, in the event that the COC becomes an MPar. For any constituent for which monthly sampling would be too frequent to obtain reasonably independent data, even using the post-sampling purge approach described in 27 CCR §20415(e)(12)(B), the discharger shall include, for concurrence by the Regional Board, a proposed date for completion of data procurement and a well- and constituent-specific technical validation for any delay of more than one month between successive sampling dates.
9. **STATISTICAL DATA ANALYSIS METHODOLOGY:**
 - a. **Intra-Well Comparisons Are Standard** — The discharger shall continue to conduct intra-well comparison analysis for all well/MPar pairs in detection mode. Except as otherwise provided in *Corrective Action/Assessment Monitoring Specification G.9.a.i.(b & c) and G.9.e.ii.*, intra-well comparison methods shall be used at all compliance wells for all MPars that are subject to data analysis under this Order and shall be used to test individual “background” (*e.g.*, upgradient) wells regarding unexpected increases in man-made constituents (*e.g.*, VOCs), as follows:

- i. **Pre-Detection Background Data Set** — Initially, except as otherwise provided in *Corrective Action/Assessment Monitoring Specification G.9.a.i.(c)(1) and (2)* or *Corrective Action/Assessment Monitoring Specification G.11*, for each given MPar at a given downgradient monitoring well (**well/MPar pair**), the proposed background data set shall consist (at a minimum) of all validated data from that compliance well and parameter from the period 1998 and through 2003. Alternatively, the discharger may propose the use of a larger dataset for establishing the pre-detection background data set. Every two years, following the adoption of the M&RP, as part of the annual monitoring summary report [see 27 CCR §20415(e)(14)], the discharger shall add the newer data to the background data set for each well/MPar pair after validating (via a method approved by the Regional Board) that the new data does not contain data indicating an increase over the existing background data. At that time, the discharger shall also retire the well/MPar's oldest two years of background data, thereby producing a data set covering a minimum of then-previous five years. The discharger shall validate the proposed intra-well background data set as follows for each MPar at each well (initially) or, subsequently, at a new well or for a new MPar at an existing well. The discharger shall report the validated or updated background data set, for each affected well/MPar pair, in the next scheduled monitoring report. Initial background data validation shall be as follows:
 - (a) **Accelerated Background Data Procurement** — if there are *less than ten post-1998 data points* available, for a given MPar at any background or compliance well, the discharger shall implement the accelerated data procurement effort described in *Corrective Action/Assessment Monitoring Program Specification G.8* to achieve that minimum background sample size (*10 data points per well*) prior to initiating the intra-well background data set validation procedure described below;
 - (b) **Validate Upgradient Data For Synthetic MPars** — for any MPar that is a non-metallic Appendix II constituent (*i.e.*, that is man-made), the initial intra-well data validation, under *Corrective Action/Assessment Monitoring Program Specification G.9.a.i.(c)*, shall utilize only data from those upgradient (or cross-gradient) background wells whose post-1992 data, for that constituent, exceeds the constituent's method detection limit in less than 10% of the well's data. Such man-made constituents should not be detectable at background wells except in error (around 1% of the time) or because the constituent comes either from the Unit or from another source. Therefore, for any background well rejected

pursuant to this paragraph, for a given MPar, if the discharger has not already explained the constituent's presence at that well to the satisfaction of the Regional Board, the discharger shall conduct an investigation under *Corrective Action/Assessment Monitoring Program Specification G.11*. If there are one or more acceptable background wells, the discharger shall use their data to validate each well/MPar pair's proposed intra-well background data set, under *Corrective Action/Assessment Monitoring Program Specification G.9.a.i. (c)*; and

- (c) **Intra-Well Background Validation for New Well/MPar Pairs** — for all compliance wells initially and, subsequently, for new wells or a new MPar at an existing well, to determine whether the existing data for that MPar at that well can be used as its intra-well comparison background data set:
 - (1) **Commonly Quantified Constituents** — for any MPar that, absent the landfill's existing, would usually be detected in ground water at concentrations exceeding the constituent's Practical Quantitation Limit (**PQL**), the discharger shall validate the proposed intra-well background data at each compliance well by comparing it to a pooled box-and-whiskers plot, for that MPar, from all "background" (upgradient or cross-gradient background) wells completed in the same ground water aquifer. If any such constituent's median concentration (for a downgradient well) exceeds the pooled background plot's 75th percentile (upper boundary of the box, in a box-and-whisker plot), then that compliance well's existing data cannot be used as the intra-well comparison background data set for that well/MPar pair. Such a well/MPar pair shall be tested; beginning no later than the next scheduled reporting period, using an inter-well comparison data analysis method [against the applicable background well(s)] that the Regional Board agrees meets the requirements of 27 CCR §20415(e)(9). Otherwise (*i.e.*, for a well/MPar pair whose existing data's median is less than the pooled background plot's 75th percentile), that existing data shall be used as the initial background data set for intra-well comparisons for that well/MPar pair; or
 - (2) **Rarely Quantified Constituents** — for an MPar that, absent the landfill's existing, would seldom be detected in ground water (*e.g.*, non-metallic Appendix II constituents), the discharger shall identify the highest value from the pooled data set from all background

wells that have passed validation under *Corrective Action/Assessment Monitoring Program Specification G.9a.i.(b)* or, in a case where all applicable upgradient well data is non-detect, the Method Detection Limit (**MDL**). The discharger shall use this value as a basis of comparison to validate the data points in the proposed intra-well background data set. The initial intra-well background data set for that downgradient well shall consist of all data points in the proposed intra-well background data set that are less than this value.

- ii. **Post-Detection Background Data Set** — For any constituent that is in “tracking mode” [*Corrective Action/Assessment Monitoring Program Specification G.9.e.ii*], at a given well, its background data set shall be the background data set that was in effect when the well/MPar pair exhibited a measurably significant increase.
- b. **Performance Standards** — All data analysis methods (statistical or nonstatistical) shall meet the requirements of 27 CCR §20415(e)(9).
- c. **Retest is Part of the Method** — If an approved data analysis method provides a preliminary indication that a given MPar has displayed a measurably significant increase in concentration at a given well, then the discharger shall perform a discrete retest, in accordance with 27 CCR §20415(e)(8)(E) for verification. The retest is part of the data analysis method; therefore, a measurably significant increase exists only if either or both of the retest samples validates the preliminary indication.
- d. **Limited Retest Scope** — For any given ground water monitoring point, the discharger shall perform the verification procedure only for those MPar's that have shown a preliminary indication at that well for that reporting period.
- e. **Water Quality Monitoring Approach** — The monitoring approach used for each well/MPar pair shall be controlled by whether that MPar has exhibited a measurably significant increase at any well within the plume. Therefore, the discharger shall monitor each well/MPar pair in one of two modes, as follows:
 - i. **Detection Mode** — For an MPar that has not produced a measurably significant increase at that well, the purpose of monitoring, for any well/MPar pair, is to watch for the MPar's arrival at that well at a concentration strong enough to trigger a measurably significant indication using an appropriate statistical or nonstatistical data analysis method; or
 - ii. **Tracking Mode** — For an MPar that has produced a measurably significant increase at any well, the purpose of the monitoring, for that well/MPar pair, is to verify the suitability and effectiveness of the

existing or proposed corrective measures by tracking changes in the MPar's concentration at that location via an evolving concentration-versus-time plot.

- f. **Detection Mode Data Analyses** — The following applies to all detection mode data analyses (*i.e.*, this paragraph does not apply to the scans under, *Corrective Action/Assessment Monitoring Program C. 10 and C. 11*):
 - i. **MPars Readily Detectable in Background** — At any given monitoring point, the discharger shall apply an approved statistical analysis for each detection mode MPar that exceeds its respective MDL in **10% or more** of the applicable background data set. For each well/MPar pair (separately), an approved statistical analysis is a method, other than Analysis Of Variance (**ANOVA**) that the Regional Board agrees meets the performance standards of 27CCR §20415(e)(9). If using SANITAS[®], the discharger shall use the “CA Standards” and “CA Retest” settings (under the “Options” pull-down menu). Otherwise:
 - (a) For any such well/MPar pair that, as of the effective date of this Order, does not have an approved statistical analysis method, the discharger shall propose and substantiate an appropriate statistical method within **30 days** of the adoption of this Order;
 - (b) After the adoption of this Order, for any new MPar that qualifies for statistical analysis by meeting the above 10% rule at a given well, the discharger shall propose and substantiate an appropriate statistical method for that well/MPar pair as part of the background data validation under *Corrective Action/Assessment Program Specification G.9.a.i.(c)*.
 - ii. **MPars Not Readily Detectable in Background** — For any monitoring point at which one or more MPars exceed their respective MDL in **less than 10%** of the applicable background data set, the discharger shall analyze the data for these MPars via the California Nonstatistical Data Analysis Method (CNSDAM) test described in *Corrective Action/Assessment Program Specification G.10*.

10. **CALIFORNIA NONSTATISTICAL DATA ANALYSIS METHOD (CNSDAM)**

- a. **Non-Statistical Method For Detection Mode MPars Seldom Found in Background**— For any given compliance (downgradient) well, the discharger shall use this data analysis method, jointly, for all constituents on the “scope list” below (or, for each retest sample, the modified scope list of paragraph b.ii below).

- i. **Scope List** — Create a current “scope list” showing each detection mode MPar, at that well, that exceeds its MDL in *less than 10%* of its background data (see *Corrective Action/Assessment Program Specification G.9.e.i*).
 - ii. **Two Triggers** — From the scope list made under paragraph a.i., above, for an initial test [or, for a retest, the modified scope list under paragraph b., below], identify each MPar in the current sample from that well that exceeds its respective MDL or PQL. The discharger shall conclude that these identified MPars provide a preliminary indication [or, for a retest, provide a measurably significant indication], at that well, of a change in the nature or extent of the release if *either*:
 - (a) two or more of the MPars exceed their respective MDL, *or*
 - (b) at least one MPar equals or exceeds its respective PQL.
 - b. **Discrete Retest** [27 CCR §20415(e)(8)(E)]:
 - i. In the event that the discharger concludes (pursuant to paragraph a.ii, above) that there is a tentative indication of a release, then the discharger shall immediately notify the Regional Board by phone or e-mail and, within **30 days** of such indication, shall collect two new (retest) samples from the indicating compliance well.
 - ii. For any given compliance well retest sample, the discharger shall include, in the retest analysis, only the laboratory analytical results for those constituents indicated in that well’s original test, under paragraph a.ii above, and these indicated constituents shall comprise the well’s “modified scope list.” As soon as the retest data are available, the discharger shall apply the same test [under paragraph a.ii, above, but using this modified scope list] to separately analyze each of the two suites of retest data at that compliance well.
 - iii. If either (or both) of the retest samples trips either (or both) of the triggers under paragraph a.ii above, then the discharger shall conclude that there is a measurably significant increase at that well for the constituent(s) indicated in the validating retest sample(s). Furthermore, thereafter, the discharger shall monitor the indicated constituent(s) in tracking mode (instead of detection mode; see *Corrective Action/Assessment Program Specification G.9.e.ii* above) at that well, shall remove the constituent(s) from the scope list created (under paragraph a.i above) for that well, and shall highlight this conclusion and these changes in the next scheduled monitoring report.
11. **Frequent Detections of a Synthetic Constituent in a Background Well** — Any time an (upgradient or cross-gradient) background well exhibits an excessive frequency or proportion of trace-level or numerical concentration data for any MPar (under *Corrective Action/Assessment Program Specification G.9 or G.12*) or COC (under *Corrective Action/Assessment Program Specification G8 or G.9*) that is a non-metallic Appendix II constituent, the discharger shall conduct an investigation under this paragraph. For such a constituent: an “excessive proportion” constitutes a condition, under *Corrective Action/Assessment Program Specification G.9.a.i.(a)*,

where 10% or more of the data from that background well exceeds the MPar's method detection level (**MDL**); and an "excessive frequency" constitutes a condition, under *Corrective Action/Assessment Program Specification G.12*, in which new data at that background well exceeds the constituent's MDL for two successive samples. Given either condition, the discharger shall notify the Regional Board immediately by phone or e-mail and shall, within **180 days** thereafter, submit a report, acceptable to the Regional Board, that examines the possibility that this constituent originated from the Unit (*e.g.*, using a concentration gradient analysis) and that proposes appropriate changes to the monitoring program. If, after reviewing this report, the Regional Board:

- a. concludes that the evidence indicates the synthetic constituent originated from a source other than the Unit, then the Regional Board may make appropriate changes to the monitoring program, including switching to an appropriate statistical inter-well comparison procedure, for that constituent, for all detection-mode analyses at that landfill, using a suite of background data that reflects the expected concentration for that constituent; or
- b. is unable to conclude that the evidence indicates the detected synthetic constituent came from a source other than the Unit, then the discharger shall:
 - i. list this constituent as an MPar, if it is not already so listed, in the next scheduled monitoring report and shall note this change prominently in the report's summary;
 - ii. shall include this background well as part of the release, for that MPar and, thereafter, shall address this well/MPar pair in tracking mode (*i.e.*, as part of the release), in spite of the well's being a background well, beginning with the next scheduled monitoring report; and
 - iii. if there is not at least one other background (*i.e.* upgradient or cross-gradient) well unaffected by this constituent, shall, within **90 days**, install a new upgradient or cross-gradient background well in a portion of the aquifer that will provide data representative of background conditions for the Unit's compliance wells.

12. **Ongoing Background Well Testing** - Even though most data analysis will be via intra-well comparisons, the discharger shall continue to monitor "background" wells (*i.e.*, upgradient or cross-gradient), for each MPar and COC, each time that MPar or COC is monitored at downgradient wells. Each year that there is new "background" well data for a constituent (*i.e.*, annually for MPars and every five years for non-MPar COCs), the discharger shall include the new data in the annual monitoring summary report [see 27 CCR §20415(e)(14)] as a time-versus-concentration plot for that "background" well and constituent. Any time such a plot (for a given well and constituent) shows two successive data points in excess of the MDL for any non-metallic Appendix II constituent that has not already been investigated at that well, under *Corrective Action/Assessment Program Specification G.11*, the discharger shall

notify the Regional Board immediately by phone or e-mail and shall initiate an investigation under *Corrective Action/Assessment Program Specification G.11* within **30 days** of noting this condition.

H. REPORTS TO BE FILED WITH THE REGIONAL BOARD

All reports shall be submitted no later than one month following the end of their respective Reporting Period. The reports shall be comprised of at least the following in addition to the specific contents listed for each respective report type:

1. Transmittal Letter

A letter summarizing the essential points shall be submitted with each report. The transmittal letter shall include:

- a. A discussion of any requirement violations found since the last such report was submitted and shall describe actions taken or planned for correcting those violations. If the discharger has previously submitted a detailed time schedule for correcting said requirement violations, a reference to the correspondence transmitting such schedule will be satisfactory. If no violations have occurred since the last submittal, this shall be stated in the transmittal letter; and
- b. A statement certifying that, under penalty of perjury, that to the best of the signer's knowledge the report is true, complete, and correct. This statement shall be signed by an individual that meets the requirements contained in **Reporting Requirement E.13** of this Order.

2. Semi-Annual Report

The semi-annual report shall contain, but not be limited to, a compliance evaluation summary of the ground water data obtained. The summary shall include the following information:

- a. Monitoring parameters;
- b. Detection limit of monitoring equipment;
- c. Measured concentrations of MPars determined from samples collected during the current sampling event;
- d. A map (or copy of an aerial photograph) which indicates the locations of observation stations, Monitoring Points, and Background Monitoring Points and ground water flow rate/direction and graphical presentation (*e.g.*, arrow on a map);

- e. Monitoring well information, method and time of ground water level measurement, and a description of the method of purging used both before and after sampling;
- f. Sampling information, type of pump used and its vertical placement, detailed description of sampling procedure, QA/QC;
- g. Leachate and run on/off control statement regarding the condition and performance of any leachate monitoring and control facilities and of the run on/off control facilities;
- h. Site inspection reports;
- i. Inspection results for temporary soil stockpiles; and
- j. An evaluation of corrective action measures in accordance with *Correction Action/Assessment Program Specification G.5.*

3. **Annual Summary Report**

The annual summary report, covering the previous monitoring year, shall contain the following information:

- a. For each monitoring point and background monitoring point, the discharger shall submit a graphical display per 27 CCR §20415(e)(14) for all data collected within at least the previous five calendar years. Each graph shall plot the concentration of one or more constituents over time for a given monitoring point, at a scale appropriate to show trends or variations in water quality. The graphs shall plot each datum, rather than plotting mean values. For any given constituent or parameter, the scale for background plots shall be the same as that used to plot downgradient data. On the basis of any aberrations noted in the plotted data, the Regional Board may direct the discharger to carry out a preliminary investigation, the results of which will determine whether or not a release is indicated. Trend analyses shall include analysis of trends that have been identified over the last monitoring year, and analysis of any newly identified trends, significant changes in a known trend or trend reversals identified in the historical data collected over the last **5 years** for groundwater, surface water (including seeps and springs), and vadose zone monitoring points (subdrains, lysimeters, or LFG);
- b. All monitoring analytical data obtained during the previous two six-month reporting periods, presented in tabular form as well as on diskettes in a file format acceptable to the Regional Board. Data sets too large to fit on a single diskette may be submitted on disk in a commonly available compressed format (*e.g.*, PK-ZIP or NORTON BACKUP) acceptable to the Regional Board. This data set shall also include the background data used as a reference in detecting the measurably significant increase.

- c. A comprehensive discussion of the compliance record, and of any corrective actions taken or planned which may be needed to bring the discharger into full compliance with this Order.
- d. A written summary of the monitoring results and monitoring system(s), indicating any changes made or observed since the previous annual report.
- e. A topographic map at appropriate scale, showing the direction of ground water flow at the landfill site.
- f. A written summary of monitoring results and monitoring system(s) indicating any changes made or observed since the previous report.
- g. For units with leachate control/monitoring facilities, an evaluation of their effectiveness, pursuant to 27 CCR §20340(b, c & d).
- h. A copy of the Storm Water Pollution Prevention Plan, or as amended.

4. **Leachate Report**

The discharger shall submit the leachate monitoring results each ***October 30***, collected during ***September***, including an identification of all detected Appendix II constituents that are not on the landfill's COC list.

For leachate sampling requiring a retest, a report shall be submitted to this office by ***April 30***. This report must identify all constituents that were detected in both the previous calendar year's September sample and in the March retest sample, and must permanently add these constituents to the landfill's COC list, and for at least two years, must also add them to its monitoring parameter list. The report shall also include an updated COC list that includes the Appendix II constituents that are newly detected in both the September and March leachate samples.

5. **Constituents of Concern Report (*every 5 years*)**

The discharger shall monitor all constituents of concern (COCs) and submit a COC Report as follows:

- a. The discharger shall sample all monitoring points and background monitoring points for each monitored medium for all COCs (Appendix II) every fifth year. The first COC report was due in Spring 1996, subsequent COC reports will be carried out ***every fifth year*** thereafter alternately in the Fall (Reporting Period ends ***September 30***) and Spring (Reporting Period ends ***March 31***). The COC report may be combined with any Monitoring Report or any Annual Summary report having a reporting period at ends at the same time. The COC

Report shall meet the minimum monitoring report requirements as described in *Reports to be Filed with the Regional Board H.1* above.

- b. The discharger shall monitor for all COCs in accordance with this Section, provided that such monitoring need only encompass those COCs that do not also serve as monitoring parameters.

6. **Periodic Iso-settlement Map**

At least every five years after completing closure of the landfill, the discharger shall produce and submit an iso-settlement map depicting the elevation of the final cover in accordance with 27 CCR §21090(e)(2). The iso-settlement map shall show all areas where differential settlement has occurred since the submittal of the previous map and shall highlight areas of repeated or severe differential settlement in accordance with 27CCR §21090(e)(2).

The discharger shall submit to the Regional Board an iso-settlement map accurately depicting the estimated total change in the surface elevation of the final cover, relative to the baseline topographic map and shall indicate all areas where visually noticeable differential settlement may have been obscured by grading operations. The map shall be drawn to the same scale and contour interval as the topographic map, but showing the current topography of the final cover and featuring overprinted isopleths indicating total settlement to date. The iso-settlement shall be submitted to the Regional Board at *five-year* intervals.

7. **Tracking Differential Settlement**

Upon completion of closure activities [as described in 27 CCR §21090(e)(1) to 21090(b)(1)(D)] at the San Marcos Landfill, the discharger shall conduct an aerial photographic survey of the landfill and its immediate surrounding area in accordance with 27 CCR §21090(e)(1). The results of this survey shall be submitted with the next subsequent semiannual monitoring report in accordance with the reporting schedule in Monitoring and Reporting Program No. R9-2003-0003.

Prior to conducting periodic grading operations on the closed landfill, the discharger shall note on a map of the landfill the approximate location and outline of any areas where differential settlement is visually obvious. Each five-yearly iso-settlement map shall show all areas where differential settlement has been noted since the previous map submittal and shall highlight areas of repeated or severe differential settlement. Map notations and delineations made pursuant to this paragraph need not be surveyed, so long as the discharger can locate all areas where differential settlement was visually identifiable prior to the completion of grading operations. Such notations and delineations shall be made by or under the direct supervision of a California registered civil engineer or a registered geologist.

8. **Construction Quality Assurance (CQA) Reports**

The discharger shall provide the Regional Board with a complete Construction Quality Assurance Report that contains all the final report elements and the results from laboratory and field testing referenced in CCR Title 27, §20320 and §20324 *et seq.* The preparation of the final CQA Report, and supervision of the CQA program, shall be performed by persons having the qualifications required by CCR Title 27, §20324(b).

9. **Use of Registered Professionals**

The discharger shall provide documentation that plans and reports required under this Order are prepared under the direction of appropriately qualified professionals. California Business and Professions Code § 6735, § 7835, and § 7835.1 require that engineering and geologic evaluations and judgements be performed by or under the direction of registered professionals. A statement of qualifications and registration numbers of the responsible lead professionals shall be included in all plans and reports submitted by the discharger. The lead professional shall sign and affix their registration stamp to the report, plan, or document.

I. **REPORTING**

Monitoring reports shall be submitted in accordance with the following:

Report Type	Report Frequency	Report Period	Report Due
Ground Water, Maintenance & CAP Progress Report	Semiannual	April – September	October 31
Ground Water, Maintenance & CAP Progress Report	Semiannual	October - March	April 30
Storm Water Pollution Prevention Plan (or update thereof)	Annual	July - June	July 30
Ground Water, Maintenance & CAP Progress Report	Annual	April – March	April 30
Leachate Monitoring	Annual	October – September	October 30
Leachate Retest*	Annual	March	April 30
COC Report ¹	First five years	October 2001 – March 2007	April 30, 2007
COC Report ¹	Second five years	April 2007 – September 2012	October 31, 2012

Iso-Settlement Map ²	Every five years	Previous five years	October 31 of each reporting year
Final Construction Quality Assurance (CQA) Report	One time (discharger to update with technical addenda as necessary)	N/A	January 31, 2006

* If necessary.

¹ COC Reports are due at alternating intervals to account for potential seasonal variations in these data (*i.e.*, every other report is due in April of the reporting year).

² The first Iso-settlement Map must be submitted **no later than five years** after completion of construction of the final landfill cover system.

Monitoring and technical reports shall be submitted to:

California Regional Water Quality Control Board
San Diego Region
9174 Sky Park Court, Suite 100
San Diego, CA 92123
Attention: Land Discharge Unit Supervisor

Ordered by **TENTATIVE**
JOHN H. ROBERTUS
Regional Board